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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,630	11/13/2001	Edward G. Callway	ATI.0100570	5733

34456 7590 07/21/2004

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EXAMINER	
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ART UNIT	PAPER NUMBER
2614	2

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/008,630	Applicant(s) CALLWAY ET AL.	
	Examiner Paulos M. Natnael	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 38-42 is/are allowed.

6)☒ Claim(s) 1-24 and 28-37 is/are rejected.

7)☒ Claim(s) 25-27 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1-23** are rejected under 35 U.S.C. 102(e) as being anticipated by West et al. et al. U.S. Patent No. 6,339,434.

Considering claim 1, West et al. disclose all claimed subject matter, note;

a) receiving a first set of pixel values representing a portion of a first image frame at a first resolution, wherein the first set of pixel values represent a first pattern with a first rate of change, is met by multiplier 64, fig. 7A. (see also Fig.7B)

b) generating a second set of pixel values related to the first set of pixel values to represent the first pattern with a second rate of change, wherein the second pattern is related to the first pattern and the second rate of change is less than the first, is also met by multiplier 64, fig. 7A.

c) re-sampling the second set of pixel values to generate a portion of a second image frame, wherein the second image frame represents the first image frame at a second resolution, different from the first resolution, is met by adder 65, fig. 7A.

Considering claim **2,** wherein the step of generating a second set of pixel values includes replicating pixel values from the first set of pixel values to generate the second set of pixel values, is met by the disclosure that "Sample rate converters increase or decrease the image size by a factor of Lx/Mx in the horizontal dimension and Ly/My in the vertical dimension..." (see Abstract)

Considering claim **3**, the method as in Claim 1, wherein the portion of the second image frame includes a set of image pixels representing at least a portion of a line of the first image frame, is implied because the input pixels are multiplied by coefficient value and the product is added in generate the second image.

Considering claim 4, the method as in Claim 1, wherein the first pattern includes a portion of text, is inherent because the image would, if desired, include image of text data as well.

Considering claim **5,** the method as in Claim 1, wherein re-sampling includes bi-linear re-sampling, is met by the disclosure that "Aspect ratio conversion is used on non-linear

image conversions where the image is stretched or condensed to the new format more significantly on the outer regions than in the center of the image where the alteration to the image would be more noticeable. For example, if the image is reformatted for a format that is wider, but the same height as the original format, the aspect of the image changes. A stretching effect can be done in a non-linear fashion to preserve the integrity of the center of the image at the expense of the outer portions of the image." (col. 6, lines 14-23)

Considering claim **6**, the method as in Claim 1, wherein the step of re-sampling includes multi-tap filtering, is met by Fig.7A and 7B, which utilizes multiple tap FIR filtering. (see also fig.2)

Considering claim **7**, the method as in Claim 1, wherein the second resolution is greater than the first resolution, is met by the disclosure that "An image scaling circuit for increasing or decreasing the size of the sampled image to match a fixed resolution display." (Abstract, see also col. 10, lines 1-15)

Considering claim **8**, the method as in Claim 1, wherein the step of re-sampling includes generating **alpha values** for interpolating the portion of the second image from the second set of pixels, is met by the value of the coefficient input to the second input of the adder 65, fig.7A.

Considering claim **9**, a computer readable medium tangibly embodying a program of instructions, said program of instructions comprising instructions to: receive a first set of pixel values representing a portion of a first image frame at a first resolution, wherein the first set of pixel values represent a first pattern with a first rate of change; generating a second set of pixel values related to the first set of pixel values to represent the first pattern with a second rate of change, wherein the second pattern is related to the first pattern and the second rate of change is less than the first; and re-sampling the second set of pixel values to generate a portion of a second image frame, wherein the second image frame represents the first image frame at a second resolution.

Regarding claim 9, see rejection of claim 1. (See also Fig. 5 which illustrates a flowchart for sample rate conversion processing which would be performed by a computer).

Considering claim **10**, the method as in Claim 9, wherein generating includes replicating pixel values from the first set of pixel values to generate the second set of pixel values.

Regarding claim 10, see rejection of claim 2.

Considering claim **11**, the method as in Claim 9, wherein the portion of the second image frame includes a set of image pixels representing at least a portion of a line of the first image frame.

Regarding claim 11, see rejection of claim 3.

Considering claim **12**, the method as in Claim 9, wherein the first pattern includes a portion of text.

Regarding claim 12, see rejection of claim 4.

Considering claim **13**, the method as in Claim 9, wherein re-sampling includes bi-linear re-sampling.

Regarding claim 5, see rejection of claim 5.

Considering claim **14**, the method as in Claim 9, wherein the step of re-sampling includes multi-tap filtering.

Regarding claim 14, see rejection of claim 6.

Considering claim **15**, the method as in Claim 9, wherein the second resolution is greater than the first resolution.

Regarding claim 15, see rejection of claim 7.

Considering claim **16**, the method as in Claim 9, wherein the step of re-sampling includes generating alpha values for interpolating the portion of the second image from the second set of pixels.

Regarding claim 16, see rejection of claim 8.

Considering claim **17**, West et al. disclose all claimed subject matter, note;

a) a first input to receive a first set of pixel values of a first image frame at a first resolution, wherein the first set of pixel values represent a first pattern with a first rate of change;

b) a replication unit to replicate pixel values from the first set of pixel values to generate a second set of pixel values, wherein the second set of pixel values represent the first pattern with a second rate of change, less than the first rate of change;

c) a re-sampler to re-sample the second set of pixel values to generate a portion of a second image frame, wherein the second image frame represents the first image frame at a second resolution.

Regarding claim 17, see rejection of claim 1.

Considering claim **18**. The system as in Claim 17, wherein said replication unit performs replicates pixel values according to an integer scale value, is met by the disclosure that "It is generally known that image scaling can be accomplished using sample rate conversion where the sample rate converter scales by a rational number L/M where L and M are positive integers. (col. 1, lines 46-65) and A sample rate converter according to claim 1 wherein the up sampler means is arranged to increase the up sample rate by a selected integer. (see col. 11, lines 23-25)

Considering claim **19**, the system as in Claim 17, wherein said first input includes a set of latches to store said first set of pixel values, is met by line memories 80. fig.7B.

Considering claim **20**, the system as in Claim 17, wherein said re-sampler includes a multi-tap filter to interpolate said second image frame from said second set of pixel values.

Regarding claim 20, see rejection of claim 6.

Considering claim **21**, the system as in Claim 20, wherein interpolation includes generating alpha values to represent relative positions of pixels in the second image frame in relation to the pixels of the second set of pixel values.

Regarding claim 21, see rejection of claim 8.

Considering claim **22**. The system as in Claim 17, wherein said second resolution is greater than said first resolution.

Regarding claim 22, see rejection of claim 7.

Considering claim **23**, the system as in Claim 17, further including a pixelated display to display the second image frame, wherein a display resolution associated with the pixelated display is equivalent to the second resolution, is met by disclosure that "the display controller 150 generates timing signals to control the pixelated output display device (col. 10, lines 16-17) and that "an image scaling circuit for increasing or

decreasing the size of the sampled image to match a fixed resolution display." (see Abstract)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **24, 28-37** are rejected under 35 U.S.C. 103(a) as being unpatentable over West et al. U.S. Patent No. 6,339,434.

Considering claim **24**, West et al. disclose the following claimed subject matter, note a) receiving an absolute alpha value, wherein the absolute alpha value represents a position, within a first range of alpha values, relative to a first source pixel, is met by multiplier 82 which receivers the output of coefficient RAM 63, Fig.7A.

Except for;

b) amplifying the absolute alpha value by a factor to generate an amplified alpha value; c)normalizing the amplified alpha value to generate a normalized alpha value so that the normalized alpha value represents a position relative to the first range of alpha values.

Regarding b) and c), West et al. does not specifically disclose amplifying the alpha value. However, amplifying or scaling the alpha, coefficient or such other values in order to generate a desired scaling of the resultant data (or image in this case) would

have been an obvious matter of design choice, since such a modification would have involved a mere change in the size of the component (or the output image). A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Considering claim **28**, the method as in Claim 24, further including the step of applying a first representation of the modified alpha value to a value associated with the first source pixel and applying a second representation of the modified alpha value to a value associated with a second source pixel to generate a value for the re-sampled pixel.

See rejection of claim 24 (b) and (c).

Considering claim **29**, the method as in Claim 28, wherein the second representation of the modified alpha value is the modified alpha value and the first representation of the modified alpha value is the difference between one and the modified alpha value.

See rejection of claim 24 (b) and (c).

Considering claim **30**, the method as in Claim 28, wherein applying includes multiplying, is met by the multiple multiplier circuit 64, fig. 7A.

Considering claim **31**, the method as in Claim 24, wherein steps in position away from the first source pixel are measured by values equivalent to an inverse of a scale ratio to be performed in generating the re-sampled pixel.

See rejection of claim 24 (b) and (c).

Considering claim **32**, the method as in Claim 24, wherein the first range includes a range of alpha values from zero to one.

Regarding claim 32, a range of alpha values from zero to one would have been an obvious matter of design choice, since applicant has not discloses that having such range solves any stated problems.

Considering claim 33, the method as in Claim 24, wherein the first source pixel is the nearest left pixel to the relative position of the re-sampled pixel and the second source pixel is the nearest right pixel to the relative position of the re-sampled pixel, is met by Fig.8 which shows mapping of input pixels to output pixels.

Considering claim **34**, the method as in Claim 24, wherein the steps are performed through the use of a multitap filter, is met by multi-tab filter as illustrated in Figs.7A and 7B.

Considering claim **35, t**he method as in Claim 34, wherein the multi-tap filter further includes a two-tap filter.

See rejection of claim 35.

Considering claim **36**, the method as in Claim 24, wherein the first source pixel includes an image pixel and the normalized alpha value is used to generate a scaled image pixel associated with the first source pixel, is also met by Fig.8 which illustrates mapping of input pixels to output pixels.

Considering claim **37**, the method as in Claim 24, wherein the steps are performed as part of operations within an image scalar, is met by image scaling circuits or the sample rate converts of Figs. 7A and 7B.

Allowable Subject Matter

5. Claims **38-42** are allowed.

6. Claims **25-27** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose, including the step of subtracting a first value from the absolute alpha value before the step of amplifying the alpha value by a factor, wherein negative values of the alpha value, after subtracting the first value, indicate closer proximity of the re-sampled pixel to the first source pixel than a second source pixel; and further wherein the step of normalizing the amplified alpha values includes:

clipping the amplified alpha value within a subset of alpha values to generate a clipped alpha value, wherein amplified alpha values outside of the subset of alpha values are set to a nearest limit of the subset of alpha values; and adding the first value to the clipped alpha value to generate the normalized alpha value, as in claim **25**;

a method of scaling a video image to match the display resolution of the display device, comprising: a first latch to store a first pixel value, said first latch including: an input coupled to an output of a pixel source to receive said first pixel value from a first set of pixel values; an output coupled to: an input of a second latch; and a first input of a first multiplier; said second latch to store a second pixel value, said second latch including: an input to receive said second pixel value from said first latch; an output coupled to a first input of a second multiplier; said first multiplier to multiply said first pixel value by a first modified alpha coefficient and generate a first product, said first multiplier including: said first input coupled to said output of said first latch; a second input coupled to a first output of an alpha modifier to receive said first modified alpha coefficient; an output coupled to a first input of an adder; said second multiplier to multiply said second pixel value by a second modified alpha coefficient to generate a second product, said second multiplier including: said first input coupled to said output of said second port; a second input coupled to a second output of said alpha modifier to receive said second modified alpha coefficient; an output coupled to a second input of said adder; an alpha coefficient modifier to limit absolute alpha coefficients proximate to an edge of a range associated with the absolute alpha coefficients to the edge, said absolute alpha coefficients proximate to an edge to be used in said first multiplier and

said second multiplier to represent replications of pixels from said pixel source; a pixel source to provide said first set of pixel values of a first image frame, wherein said set of pixel values represent a pattern at a first resolution; an accumulator to generate said absolute alpha coefficients, wherein said alpha coefficients are representative of a relative distance between an interpolated pixel and a first pixel associated with said first pixel value; and said adder to combine said first product and said second product to generate an interpolated pixel value, said adder including; said first input to receive said first product; said second input to receive said second product; and an output to provide said interpolated pixel value, wherein said interpolated value represents a pixel value of second set of pixel values, wherein said second set of pixel values represent said pattern at a second resolution, as in claim **38**;

receiving an absolute blend value, between zero and one, associated with a relative distance between a first pixel and a second pixel; subtracting 0.5 from the absolute blend value to generate a shifted blend value; multiplying the shifted blend value by a factor to generate an expanded value; clipping the expanded value between -0.5 to +0.5 to generate a fixed value; adding 0.5 to the fixed value to generate a modified blend value; applying the modified blend value to the value of the first pixel to generate a first portion of a new pixel value; applying a difference between one and the modified blend value to the second pixel to generate a second portion of the new pixel value; and combining the first portion of the new pixel value and the second portion of the pixel value to generate the new pixel, as in claim **41**.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Boland et al., U.S. Patent No. 6,674,484 discloses video sample rate conversion to achieve 3-D effects.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
July 14, 2004

PAULOS M. NATNAEL
PATENT EXAMINER